Watershed Protection: A Statewide Approach
EPA 841-R-95-004

Office of Water
(4503F)

Executive Summary

August 1995

Executive Summary

The Watershed Protection Approach is a strategy for effectively protecting and restoring aquatic ecosystems and protecting human health. This strategy has as its premise that many water quality and ecosystem problems are best solved at the watershed level rather than at the individual waterbody or discharger level. The Watershed Protection Approach has four major features: targeting priority problems, a high level of stakeholder involvement, integrated solutions that make use of the expertise and authority of multiple agencies, and measuring success through monitoring and other data gathering.

One framework that states use to implement the Watershed Protection Approach focuses on organizing and managing by the state's major watersheds, which are called basins in this document. This flexible framework encompasses management and protection of ecosystems and human health at three levels: the state, the basin, and the watersheds within each basin. Some issues are best addressed at the watershed level, such as controlling nutrient loading to small lakes or restoring headwaters riparian habitat quality. Other issues may be best addressed at the basin level, such as phosphate detergent bans, wetlands mitigation banking, or nutrient trading. Still other activities and solutions are best implemented at the state level, including policies on toxics control or the operation of permit programs.

To be comprehensive, the approach requires consideration of all environmental concerns, including needs to protect public health (including drinking water), critical habitats such as wetlands, biological integrity and surface and ground waters. This involves improved coordination among federal, state and local agencies so that all appropriate concerns are represented. Such involvement is especially important to integrate emerging programs such as ground water protection with older program frameworks. So, for example, the concerns addressed through Comprehensive State Ground Water Protection Programs (CSGWPPs), Wellhead Protection Programs, National Estuary Programs or State Management Plans for Pesticides would be considered along with concerns addressed by wetlands protection programs and our more traditional programs for point and nonpoint source pollution prevention and control. The state experiences on which this document are based reflect different levels of integration. Thus, although the document is based on their experiences, it does attempt to identify opportunities for incorporating a truly comprehensive approach.

A number of states, for example, are developing watershed approaches and CSGWPPs tailored to their priorities and individual local conditions. Together, these approaches will serve as a broad framework for facilitating surface and ground water coordination and, ultimately, will involve all appropriate state agency staff in setting goals, establishing priorities, convening and overseeing watershed teams and implementing integrated and effective solutions.

What Does Managing by Watersheds Entail?

A statewide watershed approach, as described in this document, is an approach to managing water quality by major hydrologic units. Typically, activities such as monitoring, planning, and permitting are conducted according to a set schedule (e.g., monitoring in years 1 and 2, data analysis and modeling in year 3, plan development in year 4, permit issuance and plan approval in year 5). Several state approaches have other elements in common as well:

- *Management units* -- Large hydrologic units (e.g., major river basins or aquifers) are delineated by the state; each "basin" contains multiple watersheds.
- Management cycles -- A state's basins are grouped in sequence so that the entire state is studied, and management plans developed, in a set period (typically, 5 years).
- *Stakeholder involvement* -- Agencies, organizations, and individuals interested in the water quality, ecosystem health, and management strategies are included in watershed management activities.
- *Strategic monitoring* -- Water quality and ecological health are monitored to measure the extent of problems and the stressors involved; this is typically done on a rotating basis (e.g., two summers of sampling every 5 years for a given basin).
- *Assessment* -- Data analysis and professional judgment are used to identify problems, sources, and stressors; water quality standards are integral to assessments because they reflect criteria for restoring and maintaining the physical, chemical, and biological integrity of water.
- *Prioritization and targeting* -- Waterbodies or watersheds are ranked according to resource value, degree of impairment, and other factors; specific watersheds or waterbodies are targeted for special management attention.
- *Development of management strategies* -- Realistic goals are set for the basin and its watersheds; management strategies are then developed before allocating scarce resources.
- *Basin or watershed plans* -- These plans document the assessment results, goals, and chosen management strategies for each basin or watershed; a plan may be issued in conjunction with National Pollutant Discharge Elimination System (NPDES) permits and revised periodically (e.g., every 5 years); the plan also serves to educate the public on basin-specific issues.
- *Implementation* -- Selected management strategies are implemented in the years between updates of the plan.

Why Implement a Watershed Protection Approach?

Watershed protection provides states with a framework for protecting their watersheds and addressing all priority problems, not just those most readily solved. States already implementing a Watershed Protection Approach anticipate many benefits, including:

- More direct focus by stakeholders on achieving ecological goals and water quality standards rather than on measurement of program activities such as numbers of permits or samples
- Improved basis for management decisions through consideration of both traditional stressors (e.g., toxics from point sources, biochemical oxygen demand, nutrients) and nonchemical stressors (e.g., habitat loss, temperature, sediment, low flow)
- Enhanced program efficiency because activities such as monitoring or permit writing are focused on a limited number of watersheds at a time
- Improved coordination among federal, state and local agencies and other organizations, including increased data sharing and pooling of resources
- Enhanced public involvement, including better relations with permittees due to increased involvement and greater consistency and equitability in permit conditions
- Innovative solutions such as ecological restoration, wetlands mitigation banking, and market-based solutions (e.g., pollutant trading or restoration in lieu of advanced wastewater treatment).

How Does a State Get Started?

Switching from program-centered to watershed management is a major *functional* change for most state agencies, although it need not involve a change in *organizational structure*. Strong commitment of high-level management is essential, as is strong leadership on the part of the individual(s) appointed to direct implementation. Important first steps include budgeting sufficient time for key staff who will develop the approach, educating all parties on the principles of watershed management, and establishing an efficient means of communication among staff. Several states have used outside facilitators to bring staff from various program areas together to agree on common purposes and work out potential "turf" issues.

The lead agency should consider preparing a detailed framework document that describes overall goals and objectives, the basin cycle, basin-specific schedules, roles and responsibilities of each organizational unit, procedures for developing plans, and guidelines for public involvement.

Any Watershed Protection Approach must be tailored to suit the state's particular situation. State officials can benefit from reviewing the framework documents and, in some cases, watershed management plans from states such as North Carolina, South Carolina, Nebraska, Delaware and Washington.

How Does Ground Water Protection Fit?

Ground water and surface water are often directly connected, with water flowing back and forth from one resource to the other over time. The quality of ground water contributes to the overall condition of the watershed, and ground water may serve as a medium for transporting pollutants to surface waters (and vice versa). In many instances, the Watershed Protection Approach is an appropriate framework for integrating surface water and ground water protection.

In other instances, ground water protection presents challenges that differ from those encountered in protecting surface waters. For example, because ground water is so expensive and difficult to clean up, there is heavy emphasis on prevention. Other dissimilarities between the two resources include differing transport mechanisms, monitoring approaches and resource boundaries (e.g., aquifer boundaries may not coincide with basin or watershed boundaries).

A truly comprehensive statewide approach, therefore, must be designed to address specific concerns about ground water in addition to concerns about surface water. These concerns include how to address immediate and ongoing ground water program priorities such as wellhead protection with a state's Watershed Protection Approach. CSGWPPs provide states with the opportunity to implement an aquifer protection approach that integrates well with a Watershed Protection Approach. CSGWPPs incorporate the principles of the Watershed Protection Approach in that they are place-based, include the relevant stakeholders, consider multiple environmental objectives and give the leading role to states. CSGWPPs play an important part in tailoring all water programs to meet specific needs within watersheds at the local, state and federal levels.